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Docket No. G-085US04CON
Serial No. 09/818,260Remarks

Claims 1, 4, 7, 40, 41, and 46-50 are pending in the subject application. By way of this response, Claims 1, 4, 7, 40, 41, and 46-50 have been amended. Support for these amendments can be found, for example at page 25, lines 21-23. Applicants gratefully acknowledge the Examiner's withdrawal of the rejection under 35 U.S.C. § 103(a). Favorable consideration of the pending claims is respectfully requested in view of the arguments presented herein.

Claims 1, 4, 40, 41, 46, 47, and 50 are rejected under 35 U.S.C. § 112, first paragraph, as non-enabled by the subject specification. The Office Action acknowledges that the claimed method includes the steps of determining the combined likelihood and the sum of separate likelihoods, but asserts that the specification does not disclose any algorithms or equations or any method of calculating the combined likelihood of the sum of separate likelihoods. Applicants respectfully assert that the claims are enabled by the subject specification. Applicants submit that, on page 5, lines 3-7, of the subject specification that the methodologies of the invention include an Estimation-Maximization (E-M) algorithm. The principles of this E-M algorithm are disclosed on pages 27 and 28 and reference is made to the original article describing the method (Excoffier *et al.*, *Molecular Biology & Evolution*, 1995, Vol. 12, pp. 921-927). How this E-M algorithm is applied to determine more specifically the combined likelihood and the sum of separate likelihoods is explained on page 24. In particular, page 24, lines 19-23, of the subject specification disclose "the omnibus test compares the final likelihood of the estimated haplotype frequencies from an E-M procedure run on all groups combined (the null hypothesis that all groups come from the same distribution of haplotypes) versus the sum of the final likelihoods when haplotypes are estimated within each group through the E-M procedure separately." Page 24, line 25 through to page 25, line 22 also describes in detail how the significance of the difference between sum and separate likelihoods and combined likelihood is determined by permuting haplotypes between groups. Applicants further note that the specification at page 27, line 18 through page 28, line 19 discusses how "the overall likelihood of the data can be expressed", including setting forth an expression for determining the sum or the probabilities of all genotypic combinations. Accordingly, reconsideration and withdrawal of the rejection under 35 U.S.C. § 112, first paragraph, is respectfully requested.

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Claims 1, 4, 7, 40, 41, 46, 47, and 50 are rejected under 35 U.S.C. § 112, second paragraph, as being incomplete for omitting essential steps. Claims 1, 4, 7, 40, 41, and 46-50 are rejected under 35 U.S.C. § 112, second paragraph, as indefinite. Applicants respectfully assert that the claims do not omit essential steps and that the claims are definite. In regard to the rejections of the phrases “the same distribution of haplotypes” and “the groups”, Applicants have amended the claims to attend to the rejection in claim 1 and other independent claims having the same language (e.g., claims 4, 7, 40, 41, 46, 47 and 50). Although the Office Action does not indicate the language objected to with respect to claims 7, 48 and 49, similar types of amendments have also been made in claims 7, 48 and 49 in an effort to expedite prosecution in this matter. Support for these amendments may be found at page 25, lines 25-27. Applicants also respectfully submit that the term “groups” is definite. Particularly, it is submitted that the phrase “hypothetical groups” would have been recited in the claims had that particular set of groups been intended in the claims. Accordingly, reconsideration and withdrawal of the rejections under 35 U.S.C. § 112, second paragraph, is respectfully requested.

Claims 1, 4, 7, 40, 41, and 46-50 are rejected under 35 U.S.C. § 101 as directed to non-statutory subject matter. Applicants respectfully assert that the claims are not directed to non-statutory subject matter and respectfully request reconsideration of this rejection in view of *Ex parte Carl A. Lundgren* (76 U.S.P.Q.2d 1385, 2005 (Bd. Pat. App. & Int.)) and the recently promulgated Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility arising from this decision. Particularly, Applicants respectfully submit that the claimed invention pertains to statutory subject matter as, at a minimum, the claims pertain to a computer program being claimed as part of an otherwise statutory manufacture or machine or as a computerized process where the computer executes the instructions set forth in the computer program. As set forth in Annex IV(a), such subject matter should be considered eligible for patenting by Office personnel.

Additionally, the Guidelines, at page 20, indicate: “If the examiner determines that the claim does not entail the transformation of an article, then the examiner shall review the claim to determine if the claim provides a practical application that produces a useful, tangible and concrete result. In determining whether the claim is for a “practical application,” the focus is not on whether the steps taken to achieve a particular result are useful, tangible and concrete, but rather that the final result achieved by the claimed invention is “useful, tangible and concrete.” Applicants respectfully submit

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that the claimed inventions produce a final result that is “useful, tangible and concrete”. Particularly, the presently presented claims provide a methods and devices useful in providing medical personnel with the ability to draw inferences about the relationship between a haplotype and diseases (or phenotypes). Being able to associate a haplotype with a specific disease state is a useful, tangible and concrete final result that has “real world” applicability, particularly in the realm of genetic counseling or the diagnosis of disease. Accordingly, it is respectfully submitted that the claimed inventions are statutory subject matter and reconsideration and withdrawal of the rejection is respectfully requested.

It should be understood that the amendments presented herein have been made solely to expedite prosecution of the subject application to completion and should not be construed as an indication of Applicants’ agreement with or acquiescence in the Examiner’s position. Applicants expressly reserve the right to pursue the invention(s) disclosed in the subject application, including any subject matter canceled or not pursued during prosecution of the subject application, in a related application.

In view of the foregoing remarks and amendments to the claims, Applicants believe that the currently pending claims are in condition for allowance, and such action is respectfully requested.

The Commissioner is hereby authorized to charge any fees under 37 CFR §§1.16 or 1.17 as required by this paper to Deposit Account No. 19-0065.

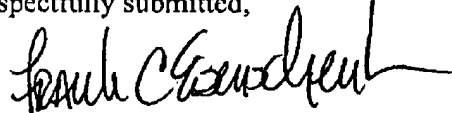
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Applicants invite the Examiner to call the undersigned if clarification is needed on any of this response, or if the Examiner believes a telephonic interview would expedite the prosecution of the subject application to completion.

Respectfully submitted,



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Attachment: Petition and Fee for Extension of Time

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